[redacted]

A08840

DEVELOPING BOB-WHITE HABITAT ON FARMLANDS

By

Paul D. Schumacher, Biologist
USDA - Soil Conservation Service
Athens, Georgia

Presented at the North American Wildlife and Natural Resources
Conference in Washington, D. C. on Tuesday,
March 4, 1969

DEVELOPING BOB-WHITE HABITAT ON FARMLAND

Paul D. Schumacher
Soil Conservation Service, Athens, Georgia

Abstract: The bob-white is and has been one of the most important species of game for the Southeast.

Changes in land use over the past 20 years have been from small fields to large fields, from small pastures to large, well-kept pastures, and from small farm woodlots to extensive tree farms. This has not been conducive to the production and distribution of bob-whites.

To encourage production and distribution of the bob-white in huntable numbers over these extensive areas requires supplemental food and cover plantings. Where landowners are willing to sacrifice as much as 5 percent of their cropland, pastureland, or woodland for the production of wildlife, an association of food and cover crops can be grown that will result in increased numbers and better distribution of bob-whites.

Field trials conducted during the past three years indicate that the production of bob-whites can be increased if this type of year-around food and cover plantings is provided.

The bob-white Colinus virginianus has been and continues to be the most important game species in the Southeast. Its ecology and food requirements have been the subject of many studies.

Man has manipulated the bob-white habitat in the Southeast from the time of the first settlers. Up until the mid-1950's, most of the manipulation was favorable to the bob-white. In more recent years it has been less favorable. The old southeastern land use pattern consisted of small fields of cropland, pastureland, and woodland divided by numerous fences and hedgerows. This pattern was well suited to the production of bob-white as it provided an abundance of food and cover.

In the 1950's changes in conventional farm patterns began to take place. Agricultural programs encouraged the conversion of cropland to other uses, and as a result drastically changed the land use pattern in the Southeast. Many acres of cropland, even whole farms, were diverted from cropland and planted to pines. Other acres were planted to grass and legumes. These land use changes had an adverse effect upon the bob-white population. When plantation pine plantings are about six years old, the number of bob-whites is reduced. Large fields of grasses and legumes are also poor bob-white habitat.

A second change in land use patterns occurred at this same time and continues today. Small fields and pastures with hedgerows and fence rows are combined into large fields or well kept pastures maintained by machinery or the use of herbicides. This change eliminated many fence rows and hedgerows that had been used as cover and travel lanes by the birds. Although there is probably more food for bob-whites with this kind of farming, the loss of protective cover and travel lanes reduced or eliminated bob-whites.

The Southeast has many landowners who want to produce a maximum huntable population of bob-whites. Some are not interested in income

from cropland, pastureland, or woodland but in the production of bob-whites. Others, although conventional farmers, still want to produce a maximum number of birds. Such landowners want and have asked for help in developing plans for the establishment and maintenance of the maximum production of quail. To render this assistance, we had to develop new methods to increase quail by land management.

In his study of quail in the Southeast, Stoddard (1931) observed that, to attract quail, an area must contain a plentiful supply of food close to good protective cover. The minimum size of a headquarters cover area was determined by Bushong (1959) to be approximately 450 square feet. It was the opinion of Robinson (1957) that the covey headquarters should be 15 yards square or 2,025 square feet. Robinson (op.cit) found that cover must be such that incident light at the birds' level will be reduced to less than 1,000 foot-candles at midday.

Quail numbers have declined because of land use changes, and their number per 100 acres is usually lower than when the land was more open with many small fields and fence rows. Woods also produce some quail, but they are very difficult to hunt on such lands. It was found by Speake (1967) in Alabama that unburned woodland produced only 11 birds per 100 acres. With controlled burning and about 10 acres of Lespedeza bicolor, an average of 50 birds per 100 acres was produced.

Our review of the literature and field experience suggested that providing food that is acceptable as to quality, quantity, variety, and seasonal distribution near to acceptable cover may be the way to increase bob-white numbers in the Southeast today. Our objective, therefore was to find ways of providing headquarters areas for bobwhite

that could be easily established and maintained with farm machinery. Food, cover, and light shade would be available in one place for the birds. A second objective was to make hunting easy in the area.

A food and cover plot complex was designed and tested in the field. The plot has a center planting of shrub lespedeza Lespedeza bicolor, L. japonica, or L. thunbergi. The plot is 70 by 70 feet and contains 700 to 800 plants. Rows are 36 to 42 inches apart. Plants are 18 to 24 inches apart in the row. On one side of the center planting is an area 70 by 10 feet in which five plants of pfitzer juniper Juniperus chinensis or eastern red cedar J. virginiana are planted. The plants are five feet from the shrub lespedeza and about five feet apart. If cedar is planted, it is kept at a height of about two feet. Such a planting gives the birds protection from light as well as from snow and ice.

Adjacent to this shrub planting, an area 80 by 70 feet is planted to a narrow leaf vetch such as hairy vetch Vicia villosa or yellow vetch V. lutea. A 70 by 90 foot area on the opposite side of the shrub lespedeza is also planted to narrow leaf vetch. The two areas of vetch, the square of shrub lespedeza and the five cover plants complete the middle strip of the plot.

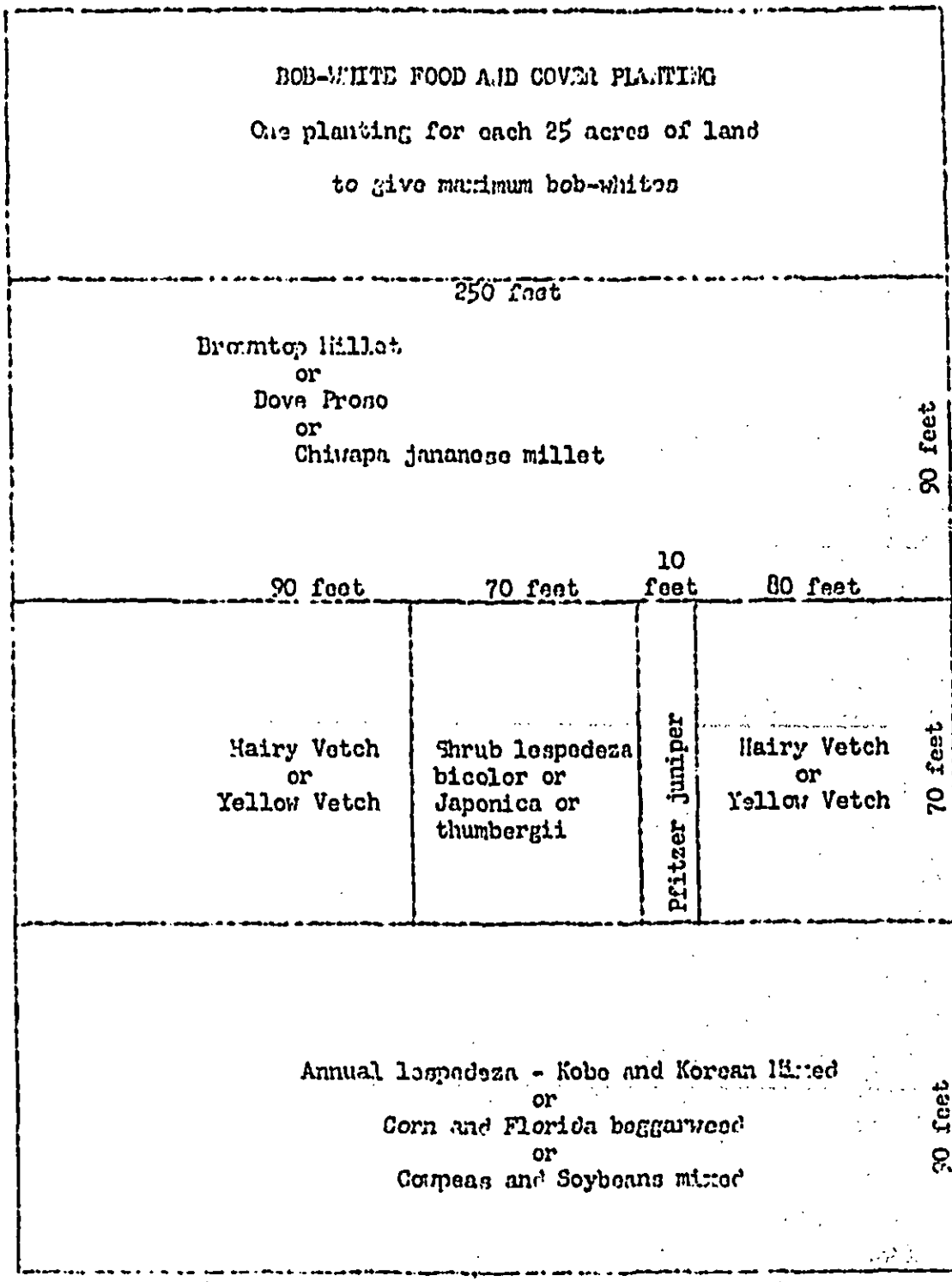
On one side of this middle strip, a 250 by 90 foot planting is made. Browntop millet Panicum ramosum, dove proso P. miliaceum, or Chiwapa japanese millet Echinochloa frumentacea can be used. On the opposite side of this middle strip, a similar 250 by 90 foot planting is made. Any of the following mixtures can be used: Kobe lespedeza L. striata and Korean lespedeza L. stipulacea; corn Zea mays and Florida beggarweed Desmodium purpureum; cowpeas Vigna sinensis and soybeans Glycine max

or *D. ussuriensis*. Soil types and rainfall help to determine which plants are adapted to a given site. The complete plot is 250 by 250 feet. A drawing of the plot is attached.

In Georgia we have found that these food and cover plots improve quail hunting. This is especially true when a plot is located on each 20 to 25 acres of land. A 223-acre farm in Fayette County, Georgia, has 11 plots. There were 14 covies of quail in October for two successive years as a result of the plantings. In Gwinnett County, Georgia, a landowner established 27 plots on 539 acres. Four hundred of the acres were a mixed pine-hardwood stand. The second year he had 41 covies of quail in October. A neighbor observing the increased bob-white production and the ease of hunting is now planting plots on his farm. He is establishing 15 plots on 360 acres. Another neighbor has established 16 plots on 425 acres, of which 225 acres are a pure pine stand. In Upson County, Georgia, a landowner established over 400 such plantings in 12,000 acres of woodland.

We recognize that some of these landowners have produced high populations of birds, and that such populations may not occur in every case. We have done enough work with the plots, however, to know that we are producing more than 50 birds per 100 acres by the method described by Speake (op.cit.).

In summary, the planted plots as described here are a reliable method by which a landowner may increase the number of bob-whites on his land.


BOB-WHITE FOOD AND COVER PLANTING
One planting for each 25 acres of land
to give maximum bob-whites
250 feet
Broomtop Millet
or
Dove Proso
or
Chiwapa Japanese millet
90 feet
90 feet
70 feet
10 feet
80 feet
Hairy Vetch
or
Yellow Vetch
Shrub lespedeza
bicolor or
Japonica or
thumbergii
Pfitzer juniper
Hairy Vetch
or
Yellow Vetch
70 feet
Annual lespedeza - Kobe and Korean Mixed
or
Corn and Florida beggarweed
or
Cowpeas and Soybeans mixed
90 feet

Literature Cited

Bushong, Clayton. 1959. More quail - the easy way. Ind. Dept. of Conserv., Div. of Fish and Game P-R Project W-2-R-20. 13 pages.

Robinson, Thane S. 1957. The Ecology of Bob-White in South Central Kansas. Misc. Publ. No. 15, Univ. of Kansas, Mu. Nat. Hist. and State Biol. Serv. 84 pages.

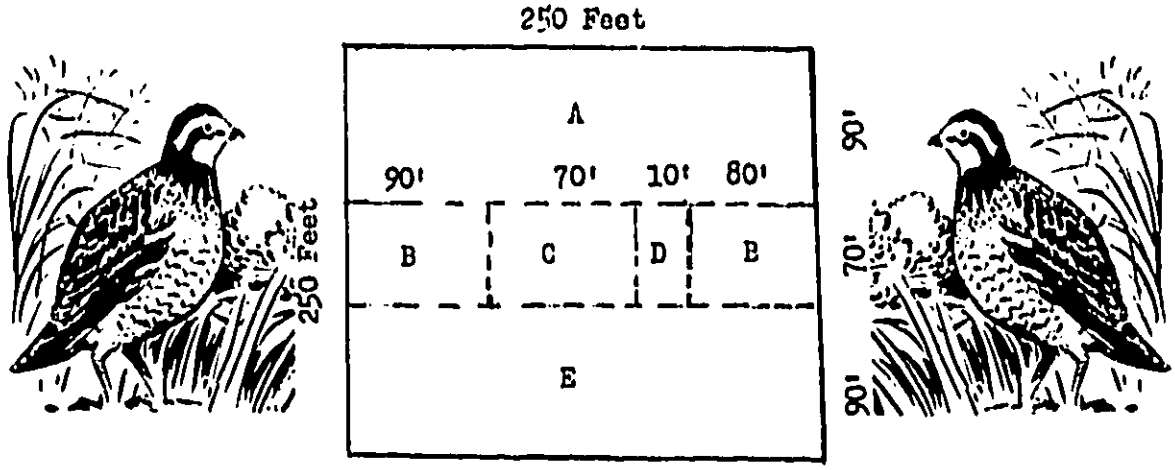
Speake, Dan W. 1967. Development of good quail habitat in Piedmont pinewoods. Highlights of Agric. Res., Agric. Exp. Sta. Auburn Univ. 14(4):5.

Stoddard, Herbert L. Sr. 1931. The Bob-White Quail, Its Habits, Preservation, and Increase. Charles Scribner's Sons, New York. 559 pages.

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ATHENS, GEORGIA

Biology #1

BOBWHITE QUAIL FOOD AND COVER PLANTING
One planting for each .25 acres of land
to give the maximum Bobwhites



Select seed or plants from each group to meet local soil conditions. Plant one kind of seed or plant from each group: A, B, C, D and E.

A. Browntopmillet, Dove proso, or Chiwaki japanesemillet (10 pounds seed).

B. Hairy vetch, yellow vetch or grandiflora vetch, 3 pounds each planting (6 pounds).

C. Shrub lespedeza - bicolor, japonica or thunbergii, 700 to 800 plants.

D. Pfitzer juniper, pyracantha, autumn olive or Yaupon, 4 or 5 plants.

E. Annual lespedeza (Kobe seed, 8 pounds
(Korean seed, 8 pounds

or

Corn and Florida beggarweed (corn, 6 pounds
(Florida beggarweed, 2½ lbs. scarified
(seed

or

Cowpeas and soybeans (cowpeas, ½ bu. of Tory, Iron, Clay, Covington or Thorsby cream
(soybeans, ½ bu., Gatan or Laredo

One side of planting should be adjacent to woods or wildlife cover (hedge row, field border, etc.).

Rotate A and E every other year. Plant on contour on sloping land.

An application of agricultural limestone should be applied to the plot before planting if needed to bring the pH up to a range of 6.0 to 7.0.

USDA SCS-PORT WASH. DEC. 1968

3-68 4-L-25878

Literature Cited

Bushong, Clayton. 1959. More quail - the easy way. Ind. Dept. of Conserv., Div. of Fish and Game P-R Project W-2-R-20. 13 pages.

Robinson, Thane S. 1957. The Ecology of Bob-White in South Central Kansas. Misc. Publ. No. 15, Univ. of Kansas, Mu. Nat. Hist. and State Biol. Serv. 84 pages.

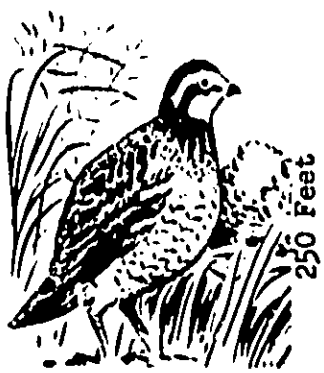
Speake, Dan W. 1967. Development of good quail habitat in Piedmont pinewoods. Highlights of Agric. Res., Agric. Exp. Sta. Auburn Univ. 14(4):5.

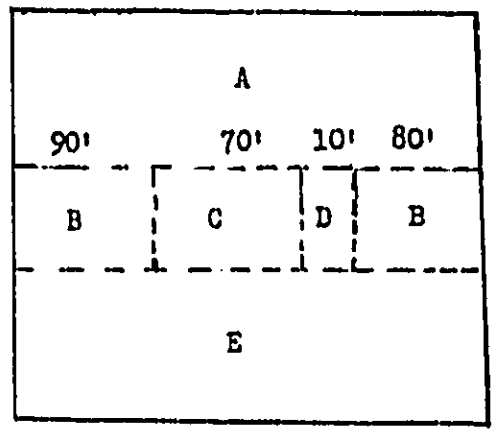
Stoddard, Herbert L. Sr. 1931. The Bob-White Quail, Its Habits, Preservation, and Increase. Charles Scribner's Sons, New York. 559 pages.

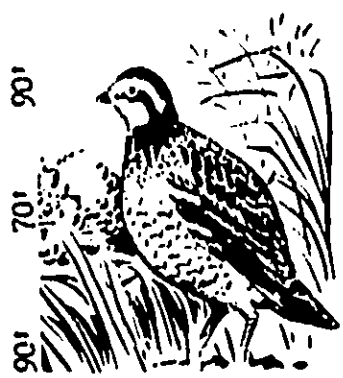
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ATHENS, GEORGIA

Biology #1

BOBWHITE QUAIL FOOD AND COVER PLANTING
One planting for each 25 acres of land
to give the maximum Bobwhites







Select seed or plants from each group to meet local soil conditions. Plant one kind of seed or plant from each group: A, B, C, D and E.

A. Browntopmillet, Dove proso, or Chiwapa japanesemillet (10 pounds seed).

B. Hairy vetch, yellow vetch or grandiflora vetch, 3 pounds each planting (6 pounds).

C. Shrub lespedeza - bicolor, japonica or thunbergii, 700 to 800 plants.

D. Pfitzer juniper, pyracantha, autumn olive or Yaupon, 4 or 5 plants.

E. Annual lespedeza (Kobe seed, 8 pounds
(Korean seed, 8 pounds

or

Corn and Florida beggarweed (corn, 6 pounds
(Florida beggarweed, 2½ lbs. scarified
(seed

or

Cowpeas and soybeans (cowpeas, ¼ bu. of Tory, Iron, Clay, Covington or Thorsby cream
(soybeans, ¼ bu., Gatan or Laredo

One side of planting should be adjacent to woods or wildlife cover (hedge row, field border, etc.).

Rotate A and E every other year. Plant on contour on sloping land.

An application of agricultural limestone should be applied to the plot before planting if needed to bring the pH up to a range of 6.0 to 7.0.

3-68 4-L-25878

Browntopmillet or Dove proso

Adapted to moderate to well-drained soils of medium to good fertility. Plant 20 pounds of seed per acre drilled on a good seedbed. Apply 400 pounds of 6-12-12 fertilizer per acre. Rotate with annual lespedeza every other year. Plant in April or May.

Hairy, Yellow, or Grandiflora vetch

Adapted to moderate to well-drained soils of medium to good fertility. Plant 24 pounds of innoculated seed per acre. Prepare a good seedbed, apply 400 pounds of 0-12-12 fertilizer per acre. Refertilize and harrow every second September after planting and replant if necessary.

Shrub lespedeza

Not adapted to pocket gopher or salamander infested or soils of high nematode infestations or high watertable soils. Prepare a good seedbed; apply 400 pounds of 0-12-12 fertilizer per acre. Plant 7,000 to 10,000 plants per acre in 36 to 42 inch rows 18 to 24 inches in the drill. Mow in late February every other year and refertilize. If planted on a sod it will be necessary to kill the sod before trying to establish the plants.

Pfitzer juniper, pyracantha, autumn olive, or yaupon

Plant four or five plants 5 feet apart and 5 feet from the shrub lespedeza. Fertilize each plant with ¼ pound of 6-12-12 fertilizer each year until the plants form a row. Hoe around plants as needed to control competing weeds.

Annual lespedeza

Adapted to clays, loams, and moist soils of medium to good fertility. Plant a mixture of Kobe and Korean, 8 pounds of each for a total of 16 pounds of seed, and apply 400 pounds of 0-12-12 fertilizer per acre. Rotate with Browntopmillet every other year. Plant in March or April.

Corn and tickclover (Florida beggarweed)

Adapted to moderate to well-drained soils of medium to good fertility. Plant 6 pounds of corn in 42-inch rows, applying 600 pounds of 10-10-10 fertilizer per acre. At last cultivation broadcast 2.5 pounds of scarified tickclover seed per acre.

Cowpeas and soybeans

Adapted to moderate to well-drained soils of medium to good fertility. Plant a mixture of 15 pounds of Tory, Thorsby cream, or Covington peas, and 15 pounds of Gatan, Laredo, or other local soybean per acre broadcast. Fertilize each year at planting with 400 pounds of 0-12-12 fertilizer per acre. Plant in May or early June.

Revised
February 16, 1968